

## **Gulfco Marine Maintenance Site Freeport, TX**

May 11, 2005

EPA Comments on the Interim Removal Action Scope of Work, and the Site Investigation and Removal Action Scope of Work, submitted by the Gulfco PRP Group May 9, 2005.

### **General Comments on Interim Removal Action (IRA):**

1. Paragraph 7: The IRA proposes to submit the IRA Work Plan to TCEQ with a copy to EPA. There is no provision for regulatory approval. The IRA shall be revised to submit the IRA Work Plan to EPA for review and approval, with a copy to TCEQ.
2. Paragraph 9(e): The IRA does not describe the type, location, and number of confirmatory samples that will be collected following decontamination of the concrete, or the benchmarks the analysis results will be compared to. The IRA shall provide this information.
3. Paragraph 12(a): There is no provision for signs along the Intracoastal Waterway to reduce the potential for unauthorized access. Signs along the Intracoastal Waterway shall be installed, in addition to the signs on the boundary fence.
4. Paragraph 15: According to the IRA, the Interim Removal Action Report will be submitted to TCEQ with a copy to EPA. There is no provision for regulatory approval. The Interim Removal action Report shall be submitted to EPA for review and approval, with a copy to TCEQ.

### **General Comments on Site Investigation and Removal Action (SI/RA):**

1. There is no inclusion or provision for a Quality Assurance Project Plan (QAPP). The SI/RA shall be revised to include a QAPP in compliance with all requirements of "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5)", 2001, and "Guidance for Quality Assurance Project Plans (EPA QA/G-5)", 2002. EPA requires a quality assurance program to ensure that the precision, accuracy, completeness, sensitivity, comparability, and representativeness of data on which Site decisions are based, including delisting, is of known and documented quality. The QAPP shall describe the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that will be used to

- achieve the desired Data Quality Objectives ( DQOs). The DQOs shall at a minimum reflect use of analytical methods for identifying contamination and remediating contamination consistent with the levels for the remedial action objectives. In addition, the QAPP shall address sampling procedures, sample custody, analytical procedures, data reduction, data validation, data reporting, and personnel qualifications.
2. The WP does not include provisions for characterizing the geology and hydrogeology below the uppermost water bearing zones and to the drinking water aquifer below the Site. The WP shall include provisions for investigations to develop this information. The top of this aquifer is unknown, but a previously used drinking water well, located adjacent to the southwest side of the Site, was screened at a depth of 188 feet to 198 feet. The top of this aquifer is unknown.
  3. Paragraph 13: The SI/RA proposes to conduct activities in accordance with all applicable TCEQ TRRP and VCP guidance. In addition, the activities shall also be in accordance with relevant EPA guidance to facilitate the NPL delisting process.
  4. Paragraph 17: The borings to evaluate the cap are to be analyzed for Atterburg Limits and percent passing a 200 sieve. A representative soil sample from each borings shall also be analyzed for permeability to evaluate the potential for vapor migration through the cap.
  5. There is no provision for sampling the surface water. The SI/RA shall be revised to collect 15 surface water samples in the wetlands adjacent to the Site. In addition, 3 surface water samples should be collected in each of the two ponds located in Lot 55 of the Site. The surface water samples shall be analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, PCBs, and metals in accordance with Table 1.
  6. Surface water sample analysis for metals shall be performed on both filtered and unfiltered samples.
  7. Hardness and pH analysis shall be performed on all surface water samples.
  8. There is no provision for sampling fish and crabs for human health exposure assessment. The SI/RA shall be revised to collect and sample 18 fish samples (filets), including 6 samples from each of 3 edible fish species. Also, it shall include collection of 6 crabs of one species. All fish and crabs collected shall be equal to or larger than the minimum size for legal possession of that species. The samples shall be collected from the Intracoastal Waterway adjacent to the Site. An additional 9 fish samples, including 3 samples from each of the same 3 species as sampled above, and 3 crab samples of the same species as sampled above, shall be collected for background analysis. The background fish samples shall be collected from the Intracoastal Waterway 0.75 miles northeast from the east edge

of the Site. The fish and crab samples shall be analyzed for SVOCs, pesticides, PCBs, and metals in accordance with Table 1.

9. The WP does not describe the maximum sample holding times or the type and amount of sample preservative(s) to be used. This information shall be included.
10. The WP shall include a demonstration that each analytical laboratory that may be used is qualified to conduct the proposed work. This includes use of methods and analytical protocols for the chemicals of concern in the media of interest within detection and quantification limits consistent with both QA/QC procedures and the DQOs presented in the QAPP. The laboratory must have, and follow, an approved QA program. If a laboratory not in the Contract Laboratory Program (CLP) program is selected, a laboratory QA program must be included in the WP.
11. The WP shall include provisions for gathering all data necessary for calculations of contaminant fate and transport.
12. The WP does not describe the decontamination procedures. This information shall be included.
13. The WP does not list the analytes to be measured, except for selected metals. The WP shall list the analytes for all methods. For EPA methods SW-846 8260, 8270, 6010, 7470, 7471, and 8081, the analyte list shall include all analytes covered by each method.
14. Grain size and total organic carbon (TOC) shall be measured on all sediment samples.
15. Sediment toxicity tests shall be run at a total of 12 locations as follows: (1) 3 in Barge Slip 1, (2) 3 in Barge Slip 2, (3) 2 in the Intracoastal Canal adjacent to the Site, (4) 2 background locations in the Intracoastal Waterway - 1 location northeast of the Site and the other southwest of the Site, (5) 3 locations in the wetlands adjacent to the Site, (6) 1 location in the wetlands 500 feet northwest from the Site, and (7) 1 location in the wetlands 1000 feet northwest from the Site. The location of the sediment toxicity test samples in the wetlands shall be biased based on the drainage pathways from the Site.
16. Biological testing shall be conducted for the ecological risk assessment as follows: (1) collecting 10 composite samples of fiddler crabs located in the wetlands northwest of the Site; and (2) collect 4 composite foraging fish ("fundulus") samples - 2 from each barge slip, and perform whole body analysis. These biological samples shall be analyzed for SVOCs, pesticides, PCBs, and metals.

17. The WP does not include analysis for polychlorinated biphenyls (PCBs). PCBs shall be analyzed in accordance with EPA Method SW846 8082. The analyte list shall all analytes covered by this method.
18. Table 1 - *Sample Analysis Summary*, does not provide for sufficient quality control samples. The quality control sampling frequency shown in the table below shall be used.

Media	Field Duplicate	Equipment Rinsate Blank	Trip Blank	Field Blank	Matrix Spike/Matrix Spike Duplicate
Aqueous	1 in 10	1 in 10 or one per day	One per sampling event	One per day	1 in 20
Soil & Sediment	1 in 10	1 in 10 or one per day	Not required	Not required	1 in 20
Tissue	Not required	1 in 10 or one per day	Not required	Not required	Not required

19. Since the planned future land use is commercial/industrial, the Response Action Plan (RAP) shall include, as a part of the remedy, the implementation of institutional controls to prevent future residential use of the Site.

*Note: The SI/RA General Comments above are in addition to the redline/strikeout revisions below.*

## *Redline/Strikeout Revisions*

### **DRAFT WORK PLAN ~~DRAFT SCOPE OF WORK~~ SITE INVESTIGATION AND REMOVAL ACTION**

### **GULFCO MARINE MAINTENANCE SUPERFUND SITE FREEPORT, BRAZORIA COUNTY, TEXAS**

#### **I. INTRODUCTION**

1. This Work Plan (WP) ~~Scope of Work (SOW)~~ describes site investigation (SI) and any necessary removal action (RA) activities that will be carried out by Respondents for the Gulfco Marine Maintenance Superfund Site (Site). This WP ~~SOW~~ is attached to the Administrative Order on Consent (AOC) for the Site and is a supporting document for the AOC. Technical work described in the WP ~~SOW~~ is intended to provide more information to Respondents for purposes of implementing the AOC and is not intended to change the meaning of any AOC language. This WP ~~SOW~~ is also consistent with both the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the National Contingency Plan (NCP). Any discrepancies between the AOC and WP ~~SOW~~ are unintended, and whenever necessary, the AOC will control in any interpretive disputes.
2. The purpose of the site investigation activities is to investigate the nature and extent of contamination for the Site, to assess the potential risk to human health and the environment, and to develop and evaluate potential removal action alternatives. The purpose of any removal action activities is to address those media and/or potential exposure routes that pose an unacceptable risk to human and/or ecological receptors.
3. Respondents will conduct the SI activities and will produce a draft Affected Property Assessment Report (APAR) and Response Action Plan (RAP) that are in accordance with the AOC. The APAR and RAP will be consistent with applicable Texas Risk Reduction Program (TRRP) and Texas Commission on Environmental Quality (TCEQ) Voluntary Cleanup Program (VCP) guidance.

#### **Purpose of the Scope of Work**

4. This WP ~~SOW~~ sets forth certain requirements of the AOC for implementation of the Work pertaining to SI activities to be undertaken by Respondents at the Site.

#### **Objectives of the Site Investigation**

5. The objectives of the SI are to investigate the nature and extent of contamination at the Site, gather the information necessary to prepare an Affected Property Assessment Report (APAR) and to develop and evaluate potential removal action alternatives, consistent with the Texas Voluntary Cleanup Program (30 TAC Chapter 333, Subchapter A), the Texas Risk Reduction Program (30 TAC Chapter 350), the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, 42 U.S.C. § 9601, et seq.), as amended by the

Superfund Amendments and Reauthorization Act of 1986 (SARA), and in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (National Contingency Plan). Specifically, these objectives are to determine the presence or absence, types, and quantities (concentrations) of contaminants; mechanism of contaminant release to pathway(s); direction of pathway(s) transport; boundaries of source(s) and pathway(s); and environmental/public health receptors as needed to evaluate indeterminate or complete and potentially significant pathways indicated in the Conceptual Site Model in Figure 1.

### **Description of the Site**

20. The Gulfco Site is located at 906 Marlin Avenue, Freeport, Brazoria County, TX. The property consists of Lots 21 through 25 and Lots 55 through 58, Subdivision 8, of the Brazos Coast Investment Company (Figure 2). Marlin Avenue separates Lots 55 through 58 on the north from Lots 21 through 25 on the south. Lots 21 through 25 are approximately four-acre tracts bordered on the south by the Intracoastal Waterway. Lots 55 through 58 are approximately five-acre tracts. The entire property is about 40 acres in size.
21. The Site was a former barge cleaning and servicing facility that operated from 1971 through 1998. Barges brought to the facility were cleaned of waste oils, caustics, and organic chemicals, and the wash waters generated during these operations were stored in three surface impoundments, or earthen pits, with natural clay liners. Located on Lot 56 on the north side of Marlin Avenue, the three surface impoundments covered a total area of about 2.3 acres. With state approval, these impoundments were closed in August 1982 by partially removing the sludges, filling the impoundments with clay, and then covering them with gravel or crushed shells. Approximately 100 cubic yards of sludge were left in the surface impoundments following closure, primarily in surface impoundment No. 2. After 1981, waste wash waters were stored in a rented floating barge or aboveground storage tanks located at the Site. The dry dock area associated with Barge Slip 1 permitted a barge to be completely removed from the water for necessary repairs on the barge hull bottom or to sandblast and repaint the entire hull.
22. Soil sampling activities performed at the Site by the Texas Natural Resource Conservation Commission (TNRCC) (now known as the Texas Commission on Environmental Quality or TCEQ) in January 2000 indicated one or more hazardous substances above background concentrations or above the sample quantitation limit (for substances not detected in site-specific background samples) in soil samples from the Site. These samples were collected near two former sandblast areas, near a former drum storage area, near a former wash water storage area, near the former impoundments, and near a driveway area on Lot 57. However, in many cases, these reported detections were qualified as estimated concentrations because one or more quality control criteria had not been met.

23. Groundwater sampling activities performed at the Site by the TNRCC in January 2001 indicated hazardous substances above background concentrations or above the sample quantitation limit (for substances not detected in site-specific background samples) in ground water samples collected from temporary monitoring wells in the immediate vicinity of the former impoundments. However, in many cases, these reported detections were qualified as estimated concentrations because one or more quality control criteria had not been met.
24. Sediment sampling activities performed in Site barge slips and areas adjacent to the Site by TNRCC in January 2000 detected one or more hazardous substances above background concentrations or above the sample quantitation limit (for substances not detected in site-specific background samples). However, in some cases, these reported  
  
detections were qualified as estimated concentrations because one or more quality control criteria had not been met.
11. The Site was proposed for listing on the National Priorities List ("NPL") on September 5, 2002 (67 FR 56794), and was placed on the NPL effective May 30, 2003, in a final rulemaking published on April 30, 2003 (68 FR 23077).

## **II. TASKS TO BE PERFORMED AND DELIVERABLES**

### **Application to Texas Commission on Environmental Quality Voluntary Cleanup Program**

12. No later than thirty (30) calendar days after the effective date of the AOC, Respondents shall submit an application to the TCEQ for entry in the Voluntary Cleanup Program (VCP). Respondents shall pay all VCP application fees to TCEQ and provide all necessary information required by TCEQ to facilitate approval of the VCP application and shall execute a VCP agreement upon application approval.

### **Conduct of the Site Investigation**

13. This WP ~~SOW~~ specifies the Work to be performed and the deliverables to be produced by the Respondents. The Respondents shall conduct SI activities in accordance with this WP ~~SOW~~, the AOC, and all applicable TRRP and TCEQ VCP guidance, as well as any additional requirements in the AOC. The Respondents shall furnish all personnel, materials, and services necessary for, and incidental to, performance of the investigation activities, except as otherwise specified in the AOC or WP ~~SOW~~.

### **Submittal of Deliverables**

14. All draft and final deliverables specified in this WP ~~SOW~~ shall be provided in hard copy, by the Respondents, to the TCEQ (two copies) and EPA (one copy). Final deliverables shall also be provided in hard copy and electronic format

(specifically, Adobe® PDF format) to the Information Repository established for the Site. All laboratory analysis results, reports, and supporting information shall be provided to EPA and TCEQ at the same time that this information is provided to the Respondents. Additionally, all deliverables specified in this WP SOW shall be submitted by the Respondents according to the requirements of this WP SOW and Appendix A (Schedule of Deliverables).

### **Tasks to be Performed by the Respondents**

15. The Respondents shall perform each of the following Tasks (Tasks 1-11) as specified in this WP SOW.

#### **Task 1 – Investigation Site Health and Safety Plan**

16. The Respondents shall prepare an investigation Site Health and Safety Plan (HSP) within thirty (30) calendar days after the effective date of this AOC. This HSP must be in compliance with Occupational Safety and Health Administration and EPA requirements, and must be in place prior to any onsite investigation activities.

#### **Task 2 – Former Impoundment Cap Evaluation**

17. The purpose of this task is to assess the construction materials and thickness of the caps constructed on the former impoundments in order to evaluate the potential for transport of volatile organic compounds (VOCs) in any residual waste materials through the cap/cover material to outdoor air (Potential Exposure Route A on Figure 1). The following activities shall be performed by Respondents as part of Task 2:
- a. Advance four soil borings at the locations shown on Figure 2. Borings will be drilled and continuously sampled to a depth of five (5) feet or to the base of the cap material, whichever occurs first.
  - b. Collect one representative soil sample from each boring for geotechnical analyses (Percent Passing No. 200 Sieve and Atterburg Limits) as indicated on Table 1.
  - c. Perform a field inspection of the caps, including observation of desiccation cracks, erosion features and overall surface condition.
  - d. Using cap geotechnical properties and field inspection observations, qualitatively evaluate the caps integrity and the potential for organic vapor transport through the caps.

#### **Task 3 – Shallow Soil Investigation**

18. The purpose of this task is to evaluate the lateral extent of potential chemicals of concern (COCs) in shallow soils (and residual sand blast grit material in soil) in order to evaluate potential human health and ecological risks associated with



direct contact with and ingestion of soil (Potential Exposure Route OO), or potential runoff from these areas to surface water (Potential Exposure Routes LL and MM). This task is also intended to provide information for identifying the potential waste classification of residual sand blast grit material at the Site. The following activities shall be performed by Respondents as part of Task 3:

- a. Collect shallow soil samples from the sixteen (16) sample locations shown on Figure 3. These judgment-based sample locations were selected based on exceedences of preliminary screening criteria and/or association with potential source areas, such as the former aboveground storage tank (AST), sand blast, or former impoundment areas. The samples at each location shall be collected from the following depths: (1) 0" to 6": sample analysis for SVOCs, pesticides/PCBs, and metals, (2) 1 foot to 2 feet: sample analysis for volatile organics (VOCs), SVOCs, pesticides/PCBs, and metals. Soil samples for VOC analysis shall be collected with Encore samplers. ~~As such, data from these locations will present a conservative indication of potential COC concentrations in shallow soils. Samples will be collected from the 0 to 2 foot depth interval from all locations.~~ At the three locations in the vicinity of the former surface impoundments, samples will also be collected from the 4 to 5 foot depth interval to correspond to the depth where samples with potential COC concentrations exceeding preliminary screening criteria were previously collected from borings HMW-1, HMW-2 and HMW-3.
- b. Collect additional soil samples from the Site north of Marlin Avenue using a grid based approach. This area shall be divided into grids with maximum grid block dimensions of 200 feet by 200 feet. Samples shall be collected from one randomly selected location within each grid block. The samples shall be collected from the following depths: (1) 0" to 6" below ground surface (bgs): sample analysis for SVOCs, pesticides, PCBs, and metals, (2) 1 foot to 2 feet bgs: sample analysis for VOCs, SVOCs, pesticides, PCBs, and metals. Soil samples for VOC analysis shall be collected with Encore samplers.
- c. Collect additional soil samples from the Site south of Marlin Avenue using a grid based approach. This area shall be divided into grids with maximum grid block dimensions of 100 feet by 100 feet. Samples shall be collected from one randomly selected location within each grid block. The samples shall be collected and analyzed as per paragraph 18.b above.
- d. Collect additional soil samples from the vacant lot area southwest of the Gulfco property. This area shall be divided into grids with maximum grid block dimensions of 100 feet by 100 feet. Samples shall be collected from one randomly selected location within each grid block. The samples shall be collected from a depth of 0" to 1" bgs with sample analysis for SVOCs, pesticides, PCBs, and metals.

- e. Collect background soil samples from two areas located northeast and northwest of the Site as shown in Figure 4 of the “HRS Documentation Record”, dated February 2002. A total of six samples shall be collected from each area, with three samples collected from 0" to 6" bgs, and three samples collected from 1 foot to 2 feet bgs in each of the two areas. The shallow and deep background samples shall have the same analysis as the Site samples.
- f. Collect shallow soil samples using either a hand auger, a plastic or stainless steel trowel, or a split-spoon sampler advanced by a drill rig. Sample lithologies will be described in the field. All sampling equipment will be decontaminated prior to and following each use. Samples will be collected in laboratory-supplied containers, preserved as necessary, placed on ice and delivered to the analytical laboratory.
- g. Analyze soil samples for the parameters indicated in Table 1. In addition to the analysis specified above, all nineteen (19) samples (two from the three locations in the vicinity of the former impoundments and one each from the other 13 locations) will be analyzed for VOCs, semi-volatile organics, total petroleum hydrocarbons (TPH), and selected trace metals. Results will be reported on a dry weight basis, so all samples will also be analyzed for moisture content. Three representative soil samples (to be selected based on field observations) collected from the Site north of Marlin Avenue, and three representative soil samples collected from the Site south of Marlin Avenue, will be analyzed for bulk density, porosity and pH to facilitate possible development of Tier 2 Protective Concentration Levels (PCLs), as discussed below.
- h. The analytical methods for the soil samples collected north of Marlin Avenue shall result in a detection limit for each analyte that is equal to, or less than, the level as specified in the EPA Ecological Soil Screening Levels; or the Ecological Benchmarks for Soil, Table 3-4; “Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas”, including any updates, for analytes not included in EPA’s Ecological Soil Screening Levels. Alternative analysis methods may be required to achieve the necessary detection limits.
- i. The analytical methods for the soil samples collected south of Marlin Avenue shall result in a detection limit for each analyte that is equal to, or less than, the level as specified in the EPA Region 6 Soil Screening Levels for commercial/industrial human health exposure.
- j. Assess the usability of soil analytical data in accordance with the applicable procedures of TRRP-13 “Review and Reporting of COC Concentration Data.”

- k. Evaluate soil sample analytical results by comparing data to screening criteria. This evaluation may include a point-by-point or statistically-based comparison in accordance with 30 TAC 350. For human health risk evaluation purposes, soil data will be compared to the critical PCL, identified as the lower of the  $^{GW}Soil_{Ing}$  or the  $^{Tot}Soil_{Comb}$  PCL for each potential COC assuming commercial/industrial land use. These PCLs will be identified based on the appropriate TCEQ groundwater classification (for the  $^{GW}Soil_{Ing}$  PCL) and may include Tier 2 or Tier 3 PCLs calculated in accordance with procedures specified in 30 TAC 350 and TRRP guidance. For ecological risk evaluation purposes, soil data (except for data from Lots 21 through 25 as discussed below) will be initially compared to Ecological Benchmarks provided in Table 3-4 of TCEQ "Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas, RG-263" (TCEQ Eco-risk Guidance) or subsequent TCEQ guidance. Given the previous history of commercial/industrial operations on Lots 21 through 25, south of Marlin Avenue, and the proposed future commercial/industrial land use of these parcels, soil samples collected from these areas will not be compared to ecological benchmarks.
- f. If an exceedance of the above screening criteria is indicated, additional soil samples ~~may~~ shall be collected to ensure that the lateral and/or vertical extent of potential COCs has been identified, and/or the screening criteria may be refined in accordance with 30 TAC 350 and applicable TRRP guidance. Should any grid location at the perimeter of the Site exceed the screening criteria, then a minimum of two additional grids with maximum dimensions of 200 feet shall be created outside of the exceeding grid, and these new grid areas shall be sampled at one random location within each grid and analyzed in the same fashion as the soil samples in this task. In the case of ecological benchmarks, this refinement may include the development of screening criteria more appropriate for the site-specific habitat and species than the generic benchmarks provided in Table 3-4 of TCEQ Eco-risk Guidance (for further details see Task 9). Any areas where soil sample data exceed critical PCLs will be identified as PCLE zones in the Affected Property Assessment Report (APAR)(see Task 10).

#### **Task 4 – Water Well Survey**

19. The purpose of this task is to provide supporting information for evaluating the potential for COC-containing groundwater or dense non-aqueous phase liquid (DNAPL) migration to water supply wells (Potential Exposure Routes L through O). The following activities shall be performed by Respondents as part of Task 4:
- a. Perform an updated search of Texas Water Development Board (TWDB) and TCEQ records for all registered water wells located within ½-mile radius of the Site boundary. As part of this search, all information related

to water well completion, lithology, owner, status, use, and water quality (if available) will be compiled.

- b. Perform a field survey to confirm/update information obtained during the records search and attempt to identify any unregistered water supply wells located within ½-mile radius of the Site boundary. If any unregistered wells are identified, information related to water well completion, lithology, owner, status, use, and water quality (if available) will be recorded.

#### **Task 5 – Groundwater Investigation**

20. The purpose of this task is to evaluate the lateral and vertical extent of potential DNAPL and COCs in groundwater in order to evaluate potential human health and ecological risks associated with: (1) groundwater or DNAPL migration to water supply wells (Potential Exposure Routes L through O); (2) groundwater or DNAPL migration to surface water (Potential Exposure Routes AA through CC); and (3) potential volatilization of VOCs from groundwater to ambient air (Potential Exposure Route DD). The following activities shall be performed by Respondents as part of Task 5:
  - a. Collect ground water samples from the Site using a grid based approach. The Site shall be divided into grids with maximum grid block dimensions of 200 feet by 200 feet. Samples shall be collected from one randomly selected location within each grid block. The samples shall be collected within the upper ten feet of the uppermost aquifer. The sample analysis shall include VOCs, SVOCs, pesticides, PCBs, metals, and TPH. These samples may be collected using direct push technology.
  - b. Install monitoring wells at the seven (7) sample locations shown on Figure 4. These sample locations were selected based on association with potential source areas, such as the former surface impoundments, the former AST tank farm, the former sand blast area, or the former wash water storage tank area. The three locations immediately northwest of the Intracoastal Waterway will also serve to provide an indication of groundwater conditions near likely points of discharge to surface water.
  - c. Drill soil borings for monitoring wells using hollow stem auger methods. An additional 8 soil borings (in addition to the 7 borings for the monitoring wells) shall be drilled 75 to 100 feet outside of the edge of the former impoundments. Soil samples will be collected continuously from each boring using a split-barrel sampler or core barrel sampler. Soil samples will be logged in the field for lithology and sedimentary structure. Soil headspace samples will be periodically collected and analyzed in the field for total organic vapor concentrations using a photoionization detector (PID) calibrated to an isobutylene standard. Soil core samples will be visually inspected for NAPL presence and field screening using

soil/water shake tests, shake tests with hydrophobic dyes and/or UV fluorescence may also be used. Soil borings will be advanced as necessary to identify the top and base of the uppermost water bearing-unit at the Site. Based on the boring logs for previous monitoring wells drilled at the Site, it is anticipated that these borings will be advanced to a maximum depth of 30 feet. In no case will a boring in which field indications of a DNAPL are noted be advanced through an underlying low permeability confining unit. Additional borings shall be drilled as necessary to define the vertical and horizontal extent of the DNAPL zone. Direct push technology may be used as an alternative to borings for defining the DNAPL zone.

- d. Construct a monitoring well within each soil boring as the augers are withdrawn. Monitoring wells will be constructed using 2-inch diameter, flush-joint-threaded Schedule 40 PVC casing and 0.010-inch slotted PVC screen. The specific well design will be determined in the field based on the observed lithology with the goal of screening the well at the base of the uppermost water-bearing unit. It is anticipated that each well screen will be approximately 10 to 15 feet in length and where possible will extend above the observed groundwater table. After a boring is completed to the total depth, the casing and screen will be lowered into the open borehole. Once the casing and screen are in place, the remaining well materials (20/40 filter sand, bentonite pellets, and cement/bentonite grout) will be added to the hole. Depths to the top of the annular materials will be measured with a weighted, calibrated tape and recorded. A bentonite seal layer will be a minimum of 2 feet in thickness. Each well will be completed above grade within a protective steel casing on a 4-foot-by-4-foot concrete pad. After construction, the position and elevation of each monitoring well will be surveyed relative to Texas state plane coordinates and mean sea level.
- e. Develop each monitoring well to remove fine-grained material and fluids affected by the drilling process. Development will be performed by pumping and/or bailing and the well will be surged using the bailer or a surge block. The temperature, specific conductance and pH of the water removed from the well will be periodically measured and recorded on a well development record to document the development process. Well development will continue until these parameters have stabilized. All well development water will be contained on-site pending characterization and management as described in Task 7.
- f. Collect a groundwater sample from each monitoring well. Prior to initiating groundwater sampling, a complete set of water levels (including an evaluation of the possible presence of NAPL using an interface probe) will be measured in all wells. In the event that NAPL is observed, an attempt will be made to collect a NAPL sample for possible future analysis. Groundwater samples will be collected using a peristaltic or

bladder pump in accordance with low-flow sampling procedures. Wells will be pumped at a rate of approximately 0.1 liters per minute during purging and sampling. Electrical conductivity, pH, temperature, dissolved oxygen and turbidity will be measured and recorded during well purging. These parameters will be allowed to stabilize prior to collecting the groundwater sample. Samples will be collected in laboratory-supplied containers, preserved as necessary, placed on ice and delivered to the analytical laboratory. It is anticipated that each monitoring well will be sampled at least twice prior to APAR submittal (Task 10 below). All purge water will be contained on-site pending characterization and management as described in Task 7.

- g. Analyze the monitoring well groundwater samples for the same parameters listed in Paragraph 20.a above and indicated in Table 1. ~~All seven samples will be analyzed for VOCs, semi-volatile organics, trace metals, organochlorine pesticides, and TPH.~~ Eight One or more groundwater samples from the initial groundwater sampling event will also be analyzed for total dissolved solids (TDS), major anions and major cations. Four of the eight ground water samples to be analyzed for TDS, anions, and cations shall be from locations distributed across the Site north of Marlin Avenue, and four shall be from locations distributed across the Site south of Marlin Avenue.
- h. The analytical methods for the ground water samples shall result in a detection limit for each analyte that is equal to, or less than, the level as specified in the Ecological Benchmarks for Water, Table 3-2; “Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas”, including any updates. Alternative analysis methods may be required to achieve the necessary detection limits.
- i. Assess the usability of groundwater analytical data in accordance with the applicable procedures of TRRP-13 “Review and Reporting of COC Concentration Data.”
- j. Perform hydraulic testing on ~~up to~~ three monitoring wells. Wells for hydraulic testing will be selected based on lithologic data, water level measurements and drawdown/recharge behavior during development and sampling, with the goal of selecting wells that represent the range of hydraulic conditions in the uppermost water-bearing unit at the Site. Slug-out tests will be performed at each of these wells using a PVC or stainless steel slug. Slug test water level data will be measured manually or using a pressure transducer. Data will be analyzed using a method appropriate for the water-bearing unit characteristics (i.e., confined or unconfined).
- k. Evaluate groundwater flow rate and direction. Site water level data will be used to construct potentiometric surface maps for the Site. These

maps along with the hydraulic testing data will be used to project groundwater flow rates and directions. A staff gauge will be installed at the Intracoastal Waterway shoreline, and in the surface water in the wetlands to the northwest of the Site, and surveyed relative to allow comparison of groundwater elevations to waterway levels.

- j. Evaluate groundwater sample analytical results by comparing data to screening criteria. For human health risk evaluation purposes, groundwater data will be compared to the critical PCL for each potential COC based on the appropriate groundwater resource classification for the uppermost water-bearing unit (i.e., either the <sup>GW</sup>GW<sub>Ing</sub> or <sup>GW</sup>GW<sub>Class 3</sub> PCL) and commercial/industrial land use. The groundwater classification will be determined in accordance with 30 TAC 350.52 and applicable TCEQ guidance. The COC volatilization from groundwater to ambient air pathway will be evaluated by comparing groundwater data to the <sup>Air</sup>GW<sub>Inh-V</sub> PCL. For ecological risk evaluation purposes, groundwater data will be initially compared to Ecological Benchmarks for water provided in Table 3-2 of TCEQ "Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas" (TCEQ Eco-risk Guidance) or subsequent TCEQ guidance.
- k. If the presence of NAPL is observed or an exceedance of the above screening criteria is indicated, collect additional groundwater samples (from existing monitoring wells, new monitoring wells or through temporary wells using direct push methods) to ensure that the lateral and/or vertical extent of potential COCs has been identified. Should any ground water sample location at the perimeter of the Site exceed the screening criteria, then a minimum of two additional ground water samples shall be collected outside of the location exceeding the screening levels in the same water bearing zone. These additional ground water samples shall be collected and analyzed in the same fashion as the ground water samples in this task. In addition, a minimum of three locations shall be sampled for ground water from the water bearing zone located immediately below the water bearing zone that exceeded the screening levels, unless this sampling would result in the penetration of a DNAPL zone. In that case, the DNAPL zone shall be defined, and the deeper samples collected outside of the DNAPL zone. This collection of additional samples shall be repeated, both vertically and horizontally, until the extent of ground water contamination has been determined. The screening criteria may be refined in accordance with 30 TAC 350 and applicable TRRP guidance. In the case of ecological benchmarks, this refinement may include the development of screening criteria more representative of the groundwater to surface water pathway, or more appropriate for site-specific surface water habitat and species than the generic benchmarks provided in Table 3-2 of TCEQ Eco-risk Guidance. Any areas where groundwater sample data exceed critical PCLs will be identified as PCLE zones in the APAR.
- l. Evaluate the possible use of previously existing monitoring wells MW-1, MW-2, MW-3, HMW-1, HMW-2, HMW-3, LGW-8, and LGW-9 for water-level measurement and potentiometric surface

assessment purposes. Wells that are deemed unusable for these purposes may be plugged and abandoned in accordance with Texas water well driller regulations.

#### **Task 6 – Sediment Investigation**

21. The purpose of this task is to evaluate the lateral extent of potential COCs in sediments in order to evaluate potential human health and ecological risks associated with: (1) uptake of COCs from sediments by ecological receptors and subsequent ingestion (Potential Exposure Route II); and (2) direct contact with and/or ingestion of sediments (Potential Exposure Route NN). The following activities shall be performed by Respondents as part of Task 6:
- a. Collect sediment samples from 16 locations in the Intracoastal Waterway adjacent to the Site. The sediment samples shall be collected as follows: (1) 5 samples located within Barge Slip 1; (2) 5 samples located within Barge Slip 2; and (3) 6 samples in the Intracoastal Waterway proper adjacent to the Site at a spacing of approximately 200 feet. Each sediment sampling location shall be sampled from two depths: (1) surface of the sediment, and (2) 1 to 2 feet below the sediment surface. ~~the ten (10) locations shown on Figure 5. These sample locations were selected to correspond to an approximate 200-foot sample grid interval adjacent to the Site shoreline within the area where concentrations of one or more potential COC in previous TNRCC sediment samples exceeded preliminary screening criteria.~~
  - b. Collect additional sediment samples from 8 locations within the two fresh water ponds located in Lot 55 as follows: (1) 5 sediment sample locations in the large fresh water pond, and (2) 3 sediment sample locations in the small pond. At each sampling location, sediment samples shall be collected from two depths as described in 21.a above.
  - c. Collect additional sediment samples from 15 locations in the wetlands adjacent to the Gulfco property. The location of the sediment samples shall be biased based on the drainage pathways from the Site. At each sampling location, sediment samples shall be collected from two depths as described in 21.a above.
  - d. Collect sediment core samples using a boat-mounted piston-coring device fitted with removable polycarbonate or stainless steel sample tubes, or similar sampling system. When the desired sediment core depth is reached, the coring device is manually raised to the sampling platform. The piston acts as a plug to prevent the sediment core from backing out of the core tube while the device is being raised. Once it reaches the sampling platform, the bottom of the core tube is plugged and the core head and piston are removed from the core tube. The sediment core is then extruded and sub-samples collected at selected depth intervals. All sediment sampling equipment will be decontaminated prior to and following each use. Sample lithologies will be described in the



field. As noted in TCEQ guidance (TRRP-24 - “Determining PCLs for Surface Water and Sediment”), the prescribed point of exposure (POE) for human exposure to sediment is within the upper one foot. The POE for potential ecological receptors is a site-specific determination, typically targeting the biologically-active aerobic sediment layer (frequently considered to be the upper four inches). As such, the sample interval for lab analysis from each core will be selected based on field observations (e.g., sediment lithologies, indications of the aerobic/anaerobic interface, etc.) and Site biota considerations. Samples will be collected in laboratory-supplied containers, preserved as necessary, placed on ice and delivered to the analytical laboratory.

- e. Analyze sediment samples for VOCs, SVOCs, pesticides, PCBs, metals, and TPH as ~~the parameters~~ indicated in Table 1.
- f. The analytical methods for the sediment samples shall result in a detection limit for each analyte that is equal to, or less than, the level as specified in the Ecological Benchmarks for Sediment, Table 3-3; “Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas”, including any updates. Alternative analysis methods may be required to achieve the necessary detection limits.
- g. Assess the usability of sediment analytical data in accordance with the applicable procedures of TRRP-13 “Review and Reporting of COC Concentration Data.”
- h. Evaluate sediment sample analytical results by comparing data to screening criteria. This evaluation may include a point-by-point or statistically-based comparison in accordance with 30 TAC 350. For human health risk evaluation purposes, sediment data will be compared to the <sup>Tot</sup>Sed<sub>Comb</sub> PCLs. These PCLs may include Tier 2 or Tier 3 PCLs calculated in accordance with procedures specified in 30 TAC 350 and TRRP guidance. For ecological risk evaluation purposes, sediment data will be initially compared to Ecological Benchmarks provided in Table 3-3 of TCEQ Eco-risk Guidance or subsequent TCEQ guidance.
- i. If an exceedance of the above screening criteria is indicated, additional sediment samples shall ~~may~~ be collected to ensure that the lateral and/or vertical extent of potential COCs has been identified. Should any sediment sample location at the perimeter of the sampled wetland area exceed the screening criteria, then a minimum of two additional sediment samples shall be collected within 200 feet of the location exceeding the screening levels. This collection of additional sediment samples shall be repeated until the extent of sediment contamination has been determined. ~~and/or~~ The screening criteria may be refined in accordance with 30 TAC 350 and applicable TRRP guidance. In the case, of ecological benchmarks, this refinement may include the development of screening criteria more appropriate for the site-specific habitat and species than the

generic benchmarks provided in Table 3-3 of TCEQ Eco-risk Guidance. Alternatively, a more detailed evaluation of the bioavailability and potential uptake of any COCs exceeding screening criteria may be conducted. Any areas where sediment sample data exceed critical PCLs will be identified as PCLE zones in the APAR.

#### **Task 7 – Investigation-Derived Waste Management**

22. The purpose of this task is to facilitate the appropriate classification and subsequent management of all investigation-derived wastes (IDW), such as auger cuttings, well development water, and decontamination water in accordance with state and federal regulations. The following activities shall be performed by Respondents as part of Task 7:
- a. Use process knowledge and data from environmental media samples to assist in the evaluation and classification of IDW, where possible (e.g., groundwater sample data can be used to evaluate classification of well development and purge water).
  - b. Collect composite samples from specific IDW waste streams, where environmental media data are not available (e.g., water collected after decontamination of drilling equipment).
  - c. Analyze each sampled IDW waste stream in accordance with applicable state and federal regulations, and in accordance with any facility-specific requirements of potential waste management (recycling/disposal) facilities.
  - d. Upon completion of SI activities, transport IDW to appropriate off-site waste management facilities or otherwise manage in accordance with all applicable state and federal regulations.
  - e. Secure all records documenting the IDW characteristics, waste classifications, quantities and final management locations.

#### **Task 8 - Community Relations**

23. The purpose of this task is to provide the local community with an explanation of SI activities and potential RA alternatives. Specifically, enable key stakeholders to be:
- a. Aware the EPA, TCEQ and Respondents are working cooperatively to investigate the nature and extent of any contamination at the Site and to develop and evaluate RA alternatives;
  - b. Understand the technology (ies) to be used and the activities to be undertaken during the SI and RA;

- c. Provided timely, accurate and well-researched information; and
  - d. Given timely verbal and/or written responses to inquiries about the SI/RA.
24. In conjunction with the SI, Respondents shall perform the following activities as part of Task 8:
- a. Identify a Respondents' Community Relations spokesperson to receive and respond to public information requests.
  - b. Develop a list of key stakeholders and a mailing list for same to facilitate communications.
  - c. Prepare and distribute to key stakeholders a Site Fact Sheet that contains information about planned SI/RA activities, Site fact/background/history, activities, and contact point for additional information, etc. A Draft of this Site Fact Sheet shall be provided to EPA for review and approval within fifteen (15) calendar days of the effective date of the AOC. Within thirty (30) calendar days of the effective date of the AOC, Respondents and EPA shall conduct a conference call to discuss and reach agreement on any EPA comments on the draft.
  - d. Prior to completion of the Engineering Evaluation/Cost Analysis (EE/CA), prepare a community relations plan.
  - e. Be prepared to meet with key stakeholders and/or members of the public, as appropriate and needed, to respond to information requests about the SI/RA.
  - f. Include information on the SI/RA in EPA's existing information repository of public documents in the Freeport Public Library.

#### **Task 9 – Ecological Risk Assessment**

25. In conjunction Using data collected as part of site investigation activities, Respondents shall complete the TCEQ Tier 1 Exclusion Criteria Checklist for the Site in accordance with applicable sections of 30 TAC 350 and TCEQ Eco-Risk Guidance. If completion of the checklist indicates that additional ecological evaluation is necessary, Respondents shall perform a Tier 2 Screening Level Ecological Risk Assessment (SLERA) in accordance with TCEQ Eco-Risk Guidance. As part of the SLERA, the COC concentrations will be compared to TCEQ benchmarks for the various media of potential concern to identify and eliminate the COCs that do not pose unacceptable ecological risk. These benchmarks can be used as the critical PCLs, if appropriate, and RA alternatives can be based on these values. Cross-media transfer will be considered when using the critical PCLs and designing additional sampling activities and/or RA alternatives.

Alternatively, the Respondents can develop a conceptual ecological model, which graphically depicts the movement of COCs through media to communities and feeding guilds, and utilize an ecological hazard quotient methodology to compare exposures to no observable adverse effects levels (NOAELs) in order to eliminate COCs that pose no unacceptable risk. Medium-specific PCLs bounded by the NOAEL and the lowest observable adverse effects level (LOAEL) for those COCs that are not eliminated will be calculated and used to design appropriate RA alternatives, if necessary.

26. At the conclusion of the Tier 2 SLERA, the Respondents shall decide that either the Tier 2 SLERA is adequate to determine that ecological threats are negligible, or the process should continue to a more detailed Tier 3 Site-Specific Ecological Risk Assessment (SSERA). If the process continues, the SLERA serves to identify exposure pathways and preliminary COCs for the SSERA by eliminating those contaminants and exposure pathways that pose negligible risks. This process can also be used to identify critical pathways or media and cleanup levels if a more detailed evaluation is not warranted or desired. A Tier 3 SSERA involves collecting site-specific data to provide a more empirical evaluation of potential ecological toxicity and risk and can be conducted when the SLERA is not appropriate or reflective of existing conditions. There are several options for conducting site-specific studies. A Tier 3 SSERA may include any or all of the following elements: tissue residue analysis and bioaccumulation studies to measure how COCs are transferred through the food chain; biomarker studies to directly measure exposure to an organism; toxicity testing to measure a specific biological endpoint following exposure; and field studies to compare with reference sites. Based on the SSERA, possible risk management recommendations may include: recommending no further action because of negligible ecological risks, developing a Tier 3 PCL and designing the RA alternative based on this value; or implementing other approaches allowed under 30 TAC 350.

#### **Task 10 – Affected Property Assessment Report**

27. The purpose of this task is to document SI activities, and identify areas, if any, within Site media where COC concentrations exceed PCLs (PCLE zones) and implementation of a RA may be required. Assuming the SI activities described in Tasks 1-9 above can be completed during a single field mobilization, Respondents shall prepare and submit two copies of a Draft APAR to TCEQ, within one hundred eighty (180) calendar days of the effective date of the AOC. A copy of this draft APAR shall also be provided to EPA for informational purposes. The APAR shall include information required by 30 TAC 350.91 and shall be submitted in the format required by TCEQ at the time of submittal.
28. The Respondents shall prepare and submit to TCEQ two copies of a Final APAR within sixty (60) calendar days after the receipt of the TCEQ's comments on the Draft APAR. The Final APAR will be responsive to the TCEQ's comments. One copy of the Final APAR shall be provided to EPA for informational purposes.

### **Task 11 – Response Action Plan**

29. The purpose of this task is to describe response objectives and propose a recommended RA alternative to address identified PCLE zones and/or other areas at the Site requiring a response action per 30 TAC 350 requirements. Toward that end, Respondents shall prepare and submit two copies of a Draft Response Action Plan (RAP) to TCEQ within sixty (60) calendar days after TCEQ approval of the Final APAR. A copy of this draft RAP shall also be provided to EPA for informational purposes, and, upon request, to interested stakeholders in accordance with Task 8. The RAP shall include information required by 30 TAC 350.94 and shall be submitted in the format required by TCEQ at the time of submittal. In order to maintain consistency with the National Contingency Plan, an EE/CA will be included as an appendix to the RAP. The EE/CA will describe and analyze several removal action objectives in accordance with the applicable sections of EPA Guidance 9360.0-32FS.
30. The Respondents shall prepare and submit to TCEQ two copies of a Final RAP within sixty (60) calendar days after the receipt of the TCEQ's comments on the Draft RAP. The Final RAP will be responsive to the TCEQ's comments on the draft and to community input provided as part of Task 8 activities. One copy of the Final RAP shall be provided to EPA for informational purposes.

### **Task 12 – Implement Approved Removal Action Alternative**

31. Consistent with the requirements of 30 TAC 350, Respondents shall implement the recommended removal action alternative approved in the Final RAP. The specific components and time frame for implementation of the removal action will be specified in the RAP.
32. Upon completion of the RA, Respondents shall prepare and submit to TCEQ two copies of a Draft Response Action Completion Report (RACR). A copy of this draft RACR shall also be provided to EPA and, upon request, to interested stakeholders in accordance with Task 8.
33. The Respondents shall prepare and submit to TCEQ two copies of a Final RACR within sixty (60) calendar days after the receipt of the TCEQ's comments on the Draft RACR. The Final RACR will be responsive to the TCEQ's comments on the draft and to community input provided as part of Task 8 activities. One copy of the Final RACR shall be provided to EPA as the basis for delisting the Site.

## APPENDIX A

### SCHEDULE OF DELIVERABLES

#### SITE INVESTIGATION AND REMOVAL ACTION GULFCO MARINE MAINTENANCE SUPERFUND SITE

DELIVERABLES	DUE DATES (CALENDAR DAYS)
1. VCP Application	Application to be submitted to TCEQ within thirty (30) days after the Effective Date of the AOC.
2. Draft Site Fact Sheet	Draft due to EPA within fifteen (15) days after the Effective Date of the AOC.
3. Draft APAR	Draft due to TCEQ (copy to EPA for informational purposes) within one hundred eighty (180) days after the Effective Date of the AOC. <sup>1</sup>
4. Final APAR	Final due to TCEQ (copy to EPA for informational purposes) within sixty (60) days after receipt of the TCEQ's comments on the Draft APAR.
5. Draft RAP	Draft due to TCEQ (copy to EPA for informational purposes) within sixty (60) days after TCEQ approval of Final APAR.
6. Final RAP	Final due to TCEQ (copy to EPA for informational purposes) within sixty (60) days after receipt of the TCEQ's comments on the Draft RAP.
7. Implement Removal Action	Schedule established in RAP.
8. Draft RACR	Draft due to TCEQ (copy to EPA) upon completion of removal action.
9. Final RACR	Final due to TCEQ (copy to EPA) within sixty (60) days after receipt of the TCEQ's

comments on the Draft RACR.
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Notes:

1. APAR submittal schedule assumes the SI activities described in Tasks 1-9 can be completed during a single field mobilization, that there are no major delays due to force majeure (e.g., tropical storm, hurricane or other weather-related access constraints) or permitting/regulatory requirements, and that EPA's review and approval of the Draft Fact sheet is done within 15 days. The above schedule will be extended by the number of days delay caused by the aforementioned items.